

Biol 1413: General Zoology
Taxonomy and Classification of Animals

Animals are distinguished from all other kingdoms by the following characteristics:

- ◆ Eucaryotic cells that lack cell walls
- ◆ lack photosynthesis (although some animals harbor symbiotic algae or bacteria that may carry out photosynthesis or chemosynthesis), instead they are heterotrophs

The taxonomy and classification of the different animal phyla relies on some basic differences in the following general characteristics:

- ◇ **Type of symmetry:**
asymmetrical, radial symmetry, bilateral symmetry
- ◇ **Number of Germ Layers (embryonic tissue layers):**
no true tissue layers, diploblastic, triploblastic
- ◇ **Presence and type of body cavity:**
acoelomate, pseudocoelomate, coelomate (eucoelomate)
- ◇ **Presence of segmentation:**
segmented vs unsegmented
- ◇ **Embryonic formation of body cavity:**
schizocoelous, enterocoelous
- ◇ **Embryonic mouth formation:**
protostomes, deuterostomes
- ◇ **Embryonic cleavage patterns:**
spiral, radial, discoidal & some others

Some other characteristics that are important in the classification of specific phyla and classes of animals relate to the diversity of different organ systems found in the animal kingdom:

- Type of digestive system: complete vs incomplete
- Type of skeletal system: exoskeleton, endoskeleton, hydroskeleton
- Type of circulatory system: open vs closed
- Type of respiratory system: gills, tracheae, lungs (and others)
- Type of reproduction: asexual, parthogenesis, hermaphroditic, dioecious